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Determination of Critical Organ Doses for Liver Scintigraphy Using Cr-51

Authors : O. Maranci, A. B. Tugrul

Abstract : Scintigraphy is an imaging method of nuclear events provoked by collisions or charged current interactions with radiation. It is used for diagnostic test used in nuclear medicine via radiopharmaceuticals emitting radiation which is captured by gamma cameras to form two-dimensional images. Liver scintigraphy is widely used in nuclear medicine.Tc-99m and Cr-51 gamma radioisotopes can be used for this purpose. Cr-51 usage is more important for patients' organ dose that has higher energy and longer half-life as compared to Tc-99m. In this study, it is aimed to determine the required dose for critical organs of patient through liver scintigraphy via Cr-51 gamma radioisotope. Experimental studies were conducted on patients even though conducting experimental studies on patients is extremely difficult for determination of critical organ doses. Torso phantom was utilized to simulate the liver scintigraphy by using 20 mini packages of Cr-51 that were placed on the organ. The radioisotope was produced by irradiation in central thimble of TRIGA MARK II Reactor at 250 KW power. As the results of the study, critical organ doses were determined and evaluated with different critic organs.

Keywords : critical organ doses, liver, scintigraphy, TRIGA Mark-II
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